

CHARACTERIZING PERSONAL INDOOR AND OUTDOOR AIR POLLUTION EXPOSURE OF PREGNANT WOMEN POPULATION

Anna Schembari, *Center for Research in Environmental Epidemiology (CREAL), Barcelona, Spain*

Hospital del Mar Research Institute (IMIM), Barcelona, Spain

University Pompeu Fabra (UPF), Barcelona, Spain

Audrey de Nazelle *Center for Research in Environmental Epidemiology (CREAL), Barcelona, Spain*

Hospital del Mar Research Institute (IMIM), Barcelona, Spain

CIBER Epidemiología y Salud Pública (CIBERESP), Spain

Margarita Triguero-Mas *Center for Research in Environmental Epidemiology (CREAL), Barcelona, Spain*

Hospital del Mar Research Institute (IMIM), Barcelona, Spain

Marloes Eeftens, *Institute for Risk Assessment Sciences, University Utrecht, Utrecht, The Netherlands*

Kees Meliefste, *Institute for Risk Assessment Sciences, University Utrecht, Utrecht, The Netherlands*

Xavier Querol, *Institute of Environmental Assessment and Water Research (IDAEA) CSIC, Barcelona, Spain*

Francesc Figueres, *Obstetrics Department, Hospital Clinic, Barcelona, Spain*

Mark Nieuwenhuijsen, *Center for Research in Environmental Epidemiology (CREAL), Barcelona, Spain*

Hospital del Mar Research Institute (IMIM), Barcelona, Spain

CIBER Epidemiología y Salud Pública (CIBERESP), Spain

Background and Aims: Recently there has been an increasing interest in investigating the ambient air pollution effect on pregnancy and foetus development. An important issue is to improve the exposure assessment approach. Barcelona has one of the highest levels of traffic related air pollution in Europe. We aimed to characterize the relationship between personal, indoor and outdoor exposure to air pollution during pregnancy.

Methods: Personal, indoor and outdoor air pollution monitoring for PM_{2.5} mass and absorbance, NO and NO₂ was simultaneously conducted in a sample of 54 pregnant women resident in Barcelona for 2 and 7 days respectively, from November 2008 to November 2009.

Results: Geometric mean exposure of outdoor samples were relatively high: (GM (GSD)) PM_{2.5}=18 µg m⁻³ (1.6), 'soot' as filter absorbance=2.70 10⁻⁵m⁻¹ (1.8), NO=23 µg m⁻³ (2.5) and NO₂=35 µg m⁻³ (1.3). The PM_{2.5} personal and indoor exposure levels were higher than the outdoor levels and showed good correlation (personal vs indoor ρ=0.81, personal vs outdoor ρ=0.39 and indoor vs outdoor ρ=0.63). A similar pattern was observed for the levels of 'soot' and NO for which we observed a higher correlation between personal and outdoor levels ρ=0.57 and ρ=0.76 respectively. Personal NO₂ mean values were lower than indoor levels, 33 µg m⁻³ (1.4) and 36 µg m⁻³ (1.4) but well correlated. Preliminary results are showed for NO₂ and NO.

Conclusions: This is the first study in Barcelona evaluating exposure levels, variation and correlation between personal indoor and outdoor air pollution exposures values in pregnant women. The differences in the personal and outdoor values indicate the need to evaluate the measurement error when performing an exposure assessment.

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